

Claims

1. Vehicle tyre with a body made of an elastic material, preferably
5 rubber or poly-urethane provided with a crown portion (1.1) containing the
running surface, two sidewalls (1.3) joined via shoulder portions (1.2) to the
crown portion and ending in beads (1.4), and with leaf springs (2) running
radially from the one bead (1.4) to the other side by side in specified
distances, and the beads (1.4) are clamped into a wheel rim (5),
10 **characterized in that** the leaf springs (2) are embedded into the body of
elastic material at least along the crown portion (1.1) and the beads (1.4),
where the leaf springs (2) are provided with inwardly bent leaf spring ends
(4) embedded into the beads (1.4), and the contour of the leaf springs (2)
from the one bead (1.4) to the other bead (1.4) is semi-elliptical, which in the
15 orthogonal coordinate system with X and Y axes can be described in the
angle range of $0 \leq t \leq \pi$ by coordinates $x = a \cdot \cos t$ and $y = b \cdot \sin t$, where
the semi-ellipse falls inside the range determined by the ellipses
corresponding to the following relationship:

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$$\frac{7}{8}a \geq b \geq \frac{1}{2}a$$

where

a is the half of the large axis of the ellipse

b is the half of the small axis of the ellipse.

25 2. Vehicle tyre according to claim 1 **characterized in that** the
semi-elliptical contour of leaf springs 2 corresponds to the following equation:

$$b = \frac{2}{3}a$$

3. Vehicle tyre according to claims 1 or 2 **characterized in that** leaf springs (2) are multilayered leaf springs comprising a number of spring plates.

4. Vehicle tyre according to any of claims 1–3 **characterized in**
5 **that** the angle (α) between the inwardly bent leaf spring ends (4) of the leaf springs (2) and the X axis of the orthogonal coordinate system is about 10° , preferably at least 8° .

5. Vehicle tyre according to claim 4 **characterized in that** the length of the inwardly bent leaf spring ends (4) of the leaf springs (2) is at
10 least 10 mm, and the said angle (α) of leaf spring ends (4) is identical to the angle between the part of the wheel rim (5) fitting to the leaf spring ends (4) and the rotation axis of the wheel rim (5).

6. Vehicle tyre according to any of claims 1–5 **characterized in**
that the distance between the leaf springs (2) in the crown portion (1.1) is at
15 least 10 mm.

7. Vehicle tyre according to any of claims 1–6 **characterized in**
that the leaf spring ends (4) of leaf springs (2) in the side view are bent into a horizontal C-shape, and in the nest of this C-shape bead-ring (9) is embedded into the rubber body of the beads.

20 8. Vehicle tyre according to any of claims 1–7 **characterized in**
that the surface of the leaf springs (2) is treated with a material facilitating adhesion to the rubber, preferably with the two-component CHEMOSIL solution or it is provided with a copper coverage.

9. Vehicle tyre according to any of claims 1–8 **characterized in**
25 **that** the leaf springs (2) are covered by some rubbered strengthening material, e.g. by Kevlar fabric under the running surface.

10. Vehicle tyre according to any of claims 1–9 **characterized in**
that above the leaf springs (2), belt inserts (3) are situated provided with some strengthening material, e.g. steel cord inserts or Kevlar fabric inserts.